

Patent Claims:

1. Method for producing and/or adjusting an electromagnetically controllable actuator which is appropriate to control the flow of a fluid, in particular a hydraulic or pneumatic analog valve or an analogized on-off valve (10), with the actuator comprising an electromagnetic arrangement that can be driven by means of an exciter coil (9) including at least one movable armature (6), and with the electromagnetic arrangement acting mechanically on a valve actuating device for opening and closing the actuator, with the valve actuating device comprising at least one closing element (5), a resetting element (27) for opening or closing the closing element when the exciter coil is not excited, and a valve seat (4) into which the closing element for opening or closing the actuator engages,  
c h a r a c t e r i z e d in that at least one electromagnetic property of the actuator is measured and the measured electromagnetic property itself or a quantity derived therefrom is used as an actual value for a control of a correcting variable, and this correcting variable is taken into account directly to produce or adjust the actuator.
2. Method as claimed in claim 1,  
c h a r a c t e r i z e d in that the electromagnetic property is one or more of the properties out of the group

- magnetic resistance  $R_M$  of the electromechanical arrangement,
  - inductance  $L$  of the electromechanical arrangement,
  - the electrically measured magnetic force  $F_{\text{magn}}$  acting on the valve actuating device,
  - the holding current  $I_{\text{hold}}$  necessary for opening or closing, or
  - the opening current  $I_{\text{open}}$  of the actuator necessary for opening or closing.
3. Method as claimed in claim 1 or 2,  
c h a r a c t e r i z e d in that the exciter coil is part of an assembly or adjustment device into which the actuator is mounted for implementing the method as claimed in claim 1.
4. Method as claimed in at least any one of the preceding claims,  
c h a r a c t e r i z e d in that the electromagnetic property, which is particularly the opening current, the holding current, the magnetic resistance, or the inductance, is adjusted by the controller when the actuator is completely closed.
5. Method as claimed in at least any one of the preceding claims,  
c h a r a c t e r i z e d in that the magnetic property, in particular the magnetic resistance, is adjusted by mechanical adjustment of the tappet stroke and/or an air slot in the magnetic arrangement when the actuator is completely opened.

6. Method as claimed in at least any one of the preceding claims,  
c h a r a c t e r i z e d in that the voltage induced at the exciter coil and/or at a measuring coil in the magnetic arrangement as a result of a current variation is measured and more particularly integrated.
7. Method as claimed in at least any one of the preceding claims,  
c h a r a c t e r i z e d in that the nominal value of the exciting current in the exciter coil is changed continuously according to a predetermined pattern and determined from the temporal actual value of the exciting current and/or the induced voltage of the valve opening current and/or the valve holding current, and the induced voltage is measured at the exciter coil and/or at a measuring coil in the magnetic circuit.
8. Method as claimed in claim 7,  
c h a r a c t e r i z e d in that the current pattern corresponds to a saw-tooth-shaped course.
9. Method as claimed in at least any one of the preceding claims,  
c h a r a c t e r i z e d in that the adjustment is a mechanical adjustment being performed during the manufacturing process of the valve.
10. Method as claimed in at least any one of the preceding claims,  
c h a r a c t e r i z e d in that initially the adjustment is performed outside an object (1, 2) and,

after the installation of the actuator into the object, an adjustment is performed inside the object in which the actuator is used, said adjustment being likewise based on the measurement of electromechanical properties.

11. Method as claimed in at least any one of the preceding claims,  
c h a r a c t e r i z e d in that the adjustment outside the object is used to compensate the influence of tolerances on the opening current characteristics, which are especially based on a different force/travel variation of the resetting elements.
12. Adjustment device for producing and/or mechanically adjusting an electromagnetically controllable actuator, in particular a pneumatic or hydraulic valve, comprising an electromagnetic exciter coil (6) which is a component part of the adjustment device and an accommodation which allows inserting an actuator that is electromagnetically drivable by the exciter coil, said actuator comprising at least one armature (7), a movable tappet (8), and a valve actuating device (4, 5, 6), and the armature can be moved by the exciter coil current to open and/or close the actuator,  
c h a r a c t e r i z e d in that the adjustment device comprises a control circuit wherein the actual value is an electromagnetic property of the actuator that can be mounted into the adjustment device, and at least one mechanical property of the actuator is adjusted by way of the correcting variable.

13. Adjustment device as claimed in claim 12,  
c h a r a c t e r i z e d in that the correcting  
variable determines the distance (X,  $\Delta X$ ) of the holding  
device of a press arrangement in which the pressed  
material is accommodated.
14. Adjustment device as claimed in claim 12 or 13,  
c h a r a c t e r i z e d in that it is used to  
implement the method according to at least any one of  
claims 1 to 11.